CLAIMS

WE CLAIM:

1. A process for producing effective bandwidths of a pulse laser beam of a narrow band electric discharge laser having a line narrowing unit comprising a grating and a fast tuning mechanism, said process comprising the steps of:

A) monitoring said laser beam to determine bandwidth of individual pulses laser pulses,

B) periodically adjusting the tuning mechanism during a series of pulses so that the wavelengths of some pulses in said series of pulses are slightly longer than a target wavelength and the wavelengths of some pulses in said series of pulses are slightly shorter than the target wavelength in order to produce for the series of pulses an average spectrum centered approximately at the target wavelength with average spectral deviation from the target wavelength approximately equal to a desired deviation.

2. A process as in Clam 1 wherein said line narrowing unit comprises a piezoelectric drive unit.

3. A process as in Claim 2 wherein said line narrowing unit comprises a tuning mirror driven by said piezoelectric drive unit.

4. A process as in Claim 1 wherein the bandwidths of individual pulses are determined by determining a slit function of a spectrometer, determining a raw data spectrum, for said laser convolving the rat data spectrum with the slit function to produce a forward convolved spectrum determining width for the forward convolved spectrum W_{FC} and a width of the raw data spectrum, W_R computing an estimate of the width of the true spectrum W_T by a formula equivalent to:

$$W_T = W_R - (W_{FC} - W_R).$$